Ruijie Reyee RG-EST350G Wireless Bridge

Installation Guide

Preface

Intended Audience

This document is intended for:

- Network engineers

- Technical support and servicing engineers

- Network administrators

Technical Support

- Official Website of Ruijie Reyee: https://reyee.ruijie.com

- Technical Support Website: https://reyee.ruijie.com/en-global/support

- Case Portal: https://www.ruijienetworks.com/support/caseportal

- Community: https://community.ruijienetworks.com

- Technical Support Email: service_rj@ruijienetworks.com

- Online Robot/Live Chat: https://reyee.ruijie.com/en-global/rita

Conventions

1. Signs

The signs used in this document are described as below:

> ⚡ **Danger**
> An alert that calls attention to safety operation instructions that if not understood or followed when operating the device can result in physical injury.

> 🛑 **Warning**
> An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

> ⚠️ **Caution**
> An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

> ℹ️ **Note**
> An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

> ✅ **Specification**
> An alert that contains a description of product or version support.

2. Note

This manual provides the device installation steps, hardware troubleshooting, module technical specifications, and specifications and usage guidelines for cables and connectors. It is intended for the users who have some experience in installing and maintaining network hardware. At the same time, it is assumed that the users are already familiar with the related terms and concepts.

Contents

1 Product Introduction

1.1 Overview

The RG-EST350G wireless bridge is launched by Ruijie Reyee. It provides surveillance video backhaul function. The RG-EST350G operates in the 5 GHz frequency band, supports two spatial streams and 2 x 2 MIMO, and provides a wireless link speed of up to 867 Mbps. The 2.4 GHz frequency band supports single-stream. The 5 GHz frequency band is mainly used for data transmission, while the 2.4 GHz frequency band is used for device management. The design of RG-EST350G adapts to inclement outdoor environments such as the cold and humidity. This substantially simplifies installation and maintenance.

1.2 Package Contents

Table 1-1   Package Contents

No.	Item	QTY
1	RG-EST350G (Network Video Recorder End)	1
2	RG-EST350G (Camera End)	1
3	24 V DC/0.6 A Power Adapter	2
4	Universal Joint	2
5	Universal Joint Nut	2
6	Hose Clamp	2
7	Mounting Bracket	2
8	1000M Passive PoE Adapter	2
9	Product Manual	1
10	Warranty Card	1
11	Wall Anchor	6
12	Phillips Pan Head Screw (ST4.2x19)	8

Note

A normal delivery should contain the above mentioned items, which may differ from the actual delivery, depending on purchase contracts. Please check your goods carefully against the Package Contents or purchase contract. If you have any questions or there are any errors, please contact your distributor.

1.3 Appearance

1.3.1 Appearance

Figure 1-1   Appearance

Front View

Rear View

ⓘ Note

The label is located on the back of the device.

1.3.2 Port & Button

Figure 1-2   Port
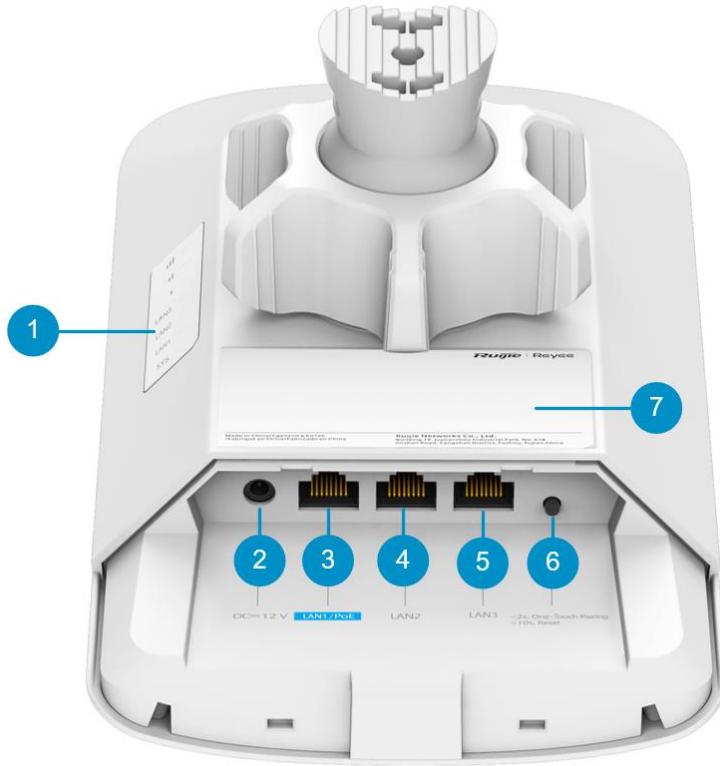
Table 1-2   Ports, Buttons and LEDs of the RG-EST450G Wireless Bridge

Mark	Item	Description
1	Status LEDs	7 status LEDs, including 1 x system LED, 3 xport LED and 3 xsignal LED
2	12 V DC power port	Support 12 V/1.2 A DC power supply
3	LAN1/PoE Port	10/100/1000Base-T Ethernet port, support 802.3af/at PoE or 24V�0.6A passive PoE
4	LAN2 Port	10/100/1000Base-T Ethernet port
5	LAN3 Port	10/100/1000Base-T Ethernet port

Mark	Item	Description
6	Reset/One-Touch Pairing Button	● Press and hold for less than 2s: the router will pair with the mesh repeater in 30 seconds. A pairing LED will flash during pairing. ● Press and hold for less than 2s<T<10s: no action is triggered. ● Press and hold the button for more than 10 seconds: restore the device to factory settings.
7	Label	Contains the product name, model, I/O parameters, default IP address, etc.

ⓘ **Note**

● After the next button is pressed for pairing, the device switches to BaseStation mode regardless of whether it is in BaseStation or CPE mode.

● During one-click pairing for bridging, the signal LED on the NVR will blink for 1 minute, and the signal LEDs on the IPC end and NVR end will blink until the bridging is complete.

● Only devices with factory settings and no bridging are supported to set the bridge as camera end through one-click pairing.

● The one-click pairing function is enabled by default and can be disabled through the web management system.

● One-click pairing is disabled during interference scanning.

Table 1-3   LEDs

LED	Status	Description
System LED	Solid green	The device is operating normally.
	Blinking	Fast blinking (8 to 10 times/second): The device is starting up. Fast blinking (2 times/second): The device is initializing. Fast blinking (2 times/second): The device is upgrading.
	Off	The device is NOT receiving power.
LAN1/LAN2/LAN3 port LED	Solid green	A valid link is established, but the port is not receiving or sending data.
	Blinking green	A valid link is established, and the port is receiving or sending data.
	Off	No link is established.
Signal LEDs	Off	The device is not bridged.
	LED 1 on/blinking	The device is bridged and the RSSI is below -75 dBm.

LED	Status	Description
	LED 1 on	The RSSI is above -75 dBm.
	LED 1 on, LED 2 blinking	The RSSI is above -73 dBm.
	LEDs 1 and 2 on	The RSSI is above -71 dBm.
	LEDs 1 and 2 on, LED 3 blinking	The RSSI is above -68 dBm.
	LEDs 1, 2, and 3 on	The RSSI is above -64 dBm.
	LEDs 1, 2, and 3 blinking	The mesh pairing is in progress.

1.4 Device Specification

Table 1-4   Table 1-1 **Specifications**

Radio Design	2.4 GHz: single-stream 5 GHz: dual-stream 2x2 MIMO
Protocol and Standard	5 GHz: 802.11ac/n/a 2.4 GHz: 802.11b/g/n
Operating Frequency Bands	2.4 GHz: 802.11 b/g/n: 2.4000 GHz to 2.483 GHz 5 GHz: 802.11a/n/ac: 5.150 GHz to 5.350 GHz, 5.470 GHz to 5.725 GHz, 5.725 GHz to 5.850 GHz **ⓘ Note** Country-specific restrictions apply. - European Union & United Kingdom: 2400-2483.5 MHz, EIRP ≤ 20 dBm 5470-5725 MHz, EIRP ≤ 30 dBm - Myanmar: 2400-2483.5 MHz, EIRP ≤ 23 dBm 5725-5825 MHz, EIRP ≤ 30 dBm - Thailand: 2.4 GHz to 2.4835 GHz: 20 dBm 5.725 GHz to 5.825 GHz: 30 dBm - Indonesia: 2400-2483.5 MHz, EIRP ≤ 27 dBm 5725-5825 MHz, EIRP ≤ 23 dBm - Egypt: 2400-2483.5 MHz, EIRP ≤ 20 dBm 5150-5350 MHz, EIRP ≤ 23 dBm
Antenna Type	2.4G: PCB, 5G: Directional antenna (horizontal/vertical): 31°/14°
Antena Gain	2.4 GHz: 1.75 dBi 5 GHz: 15.78 dBi
Bridging Signal Strength	5 km
Data Rate	2.4 GHz: 150 Mbps 5 GHz: 867 Mbps
Modulation Technology	- OFDM: BPSK@6/9Mbps, QPSK@12/18Mbps, 16-QAM@24/36Mbps, 64-QAM@48/54Mbps - MIMO-OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM

Receive Sensitivity	● 11a: -89dBm (6Mbps), -80dBm (24Mbps), -76dBm (36Mbps), -71dBm (54Mbps) ● 11n: -83dBm@MCS0, -65dBm@MCS7, -83dBm@MCS8, -65dBm@MCS15 ● 11ac: -86dBm(MCS0), -63dBm(MCS9)
Max. Transmit Power	● 2.4 GHz: 100 mW ● 5 GHz: 400 mW (26 dBm) (single stream)
Power Step	1 dBm
Dimensions (L x W x H)	240 mm x 133 mm x 108 mm (9.45 in. x 5.24 in. x 4.25 in.) (excluding the mounting bracket)
Net Weight	0.73 kg (1.61 lbs.)
Service Ports	3 x 10/100/1000Base-T auto-negotiation ports, where LAN1/PoE port supports 24 V PoE input
Buttons	1 x reset button
LED	1 x system LED, 3 x port LED, and 3 x signal LED
Power Supply	● 24 V passive PoE power supply (A passive PoE adapter is delivered with the wireless bridge.) ● 12 V DC (solar panel)
Max. Power Consumption	≤ 12 W
Environment	Operating temperature:　–30℃　to +65℃　(–22°F to +149°F)
	Storage temperature: –40℃　to 85℃　(–40°F to +185°F)
	Operating humidity: 5% to 95% RH (non-condensing)
	Storage humidity: 5% to 95% RH (non-condensing)
Installation	● Wall-mount ● Pole-mount
IP Rating	IP55
Flame Rating	UL94V-0
Certification	CE
MTBF	> 400000 hrs

ℹ **Note**

The weight refers to the weight of the main unit.

1.5 Power Specification

RG-EST350G 12 V $\overline{\cdots}$ 1.2 A DC power supply, 24 V PoE non-standard power supply, or IEEE 802.3at/af standard PoE power supply. The product is equipped with a 24 V/0.6 A DC power adaptor and 1000M passive PoE combiner by default..

- Technical specifications of the DC adapter:

Inner Diameter	Outer Diameter	Depth
2.10 ± 0.1 mm (0.083 in. ± 0.004 in.)	5.50 ± 0.1 mm (0.22 in. ± 0.004 in.)	10 mm ± 0.5 mm (0.39 in. ± 0.02 in.)

⚠ **Warning**
- For DC power supply, the DC adapter required for this wireless bridge is not included in the package. You can purchase the DC adapter separately from us.
- For PoE power supply, use the provided PoE adapter in the package. Do not use other models of PoE adapters or switches for power supply as it may lead to irreparable damage to the device.

2 Safety Precautions

2.1 Safety Precautions

ℹ **Note**
- To prevent device damage and physical injury, please read carefully the safety recommendations described in this chapter.
- The following safety suggestions do not cover all possible dangers.

2.1.1 General Safety Precautions

- Do not expose the device to high temperature, dusts, or harmful gases. Do not install the device in an inflammable or explosive environment. Keep the device away from EMI sources such as large radar stations, radio stations, and substations. Do not subject the device to unstable voltage, vibration, and noises.

- The installation site should be far away from the sea. Keep the device at least 500 meters away from the seaside and do not face it toward the wind from the sea.

- The installation site should be free from water flooding, seepage, dripping, or condensation. The installation site shall be selected according to network planning and features of communications device, and considerations such as climate, hydrology, geology, earthquake, electric power, and transportation.

⚠ **Caution**

Please follow the correct methods described in the installation guide to install and remove the device.

2.1.2 Handling Safety

- Prevent the device from being frequently handled.
- Cut off all the power supplies and unplug all power cords before moving or handling the device.

2.1.3 Electric Safety

❗ **Warning**
- Improper or incorrect electric operations may cause a fire, electric shock, and other accidents, and lead to severe and fatal personal injury and device damage.
- Direct or indirect contact with high voltage or mains power supply via wet objects may cause fatal dangers.

- Observe local regulations and specifications during electric operations. Only personnel with relevant qualifications can perform such operations.

- Check whether there are potential risks in the work area. For example, check whether the power supply is grounded, whether the grounding is reliable, and whether the ground is wet.

- Find out the location of the emergency power supply switch in the room before installation. First cut off the power supply in case of an accident.

- Be sure to make a careful check before you shut down the power supply.

- Do not place the device in a damp/wet location. Do not let any liquid enter the device.

- Keep the device far away from the grounding or lightning protection devices of power device.

- Keep the device away from high-power radio stations, radar stations, and high-frequency high-current devices.

2.2 Installation Environment Requirements

To ensure normal operation and a prolonged useful life of the device, the installation site must meet the following requirements.

2.2.1 Environment Requirements

- Install the device in a well-ventilated environment. If it is installed in a closed room, make sure there is a good cooling system.

- Make sure the site is sturdy enough to support the device and its accessories.

- Make sure the site has enough space for installing the device and leave sufficient space around the device for ventilation.

2.2.2 Lightning Protection Requirements

- When the connection cable between the main grounding conductor and local equipotential earthing terminal board (LEB) on each floor is shorter than 2 meters, use a stranded copper wire with a sectional area not less than 1.318 mm^2 (16 AWG) for the connection cable.

- Use a shielded network cable if possible, ensure that devices connected to both ends of the shielded network cable are reliably grounded, and make sure that the sheath of the shielded network cable is also grounded if possible. If no shielded network cable is available, wire the network cable through a steel pipe and bury the steel pipe for lead-in, and properly ground both ends of the steel pipe.

- No additional lightning protector is required as a high-profile lightning protector is built in the device and the antenna port and power port support 4kV lightning protection. If a lightning protector of a higher profile is available, configure the lightning protector optionally. Before the configuration, connect the lightning protector to the ground cable.

2.2.3 Temperature/ Humidity Requirements

To ensure the normal operation and prolonged service life of the device, maintain an appropriate temperature and humidity in the equipment room.. The equipment room with too high or too low temperature and humidity for a long period may damage the device.

- In an environment with high humidity, the insulating material may have bad insulation or even leak electricity and sometimes the materials may suffer from mechanical performance change and metallic parts may get rusted.

- In an environment with low humidity, the insulating strip may dry and shrink, and static electricity is prone to occur and damage the internal circuits of the device.

- In an environment with high temperature, the device is subjected to even greater harm, as its performance may degrade significantly and its useful life may be shortened in the case of long-term exposure that expedites the aging process.

Table 2-1   Temperature and Humidity Requirements

Operating Temperature	Operating Humidity:
-30°C to 65°C (-22°F to 149°F)	5% to 95% RH (non-condensing)

2.2.4 Anti-interference Requirements

- Take interference prevention measures for the power supply system.

- Keep the device far away from the grounding or lightning protection devices of power device.

- Keep the device far away from high-power radio stations, radar stations, and high-frequency high-current devices.

2.3 Tools

Table 2-2   Tools

Common Tools	Marker, Philips screwdriver, drill, hammer, hose clamp, related copper and fiber cables, diagonal pliers, cable ties
Special Tools	Anti-static glove, stripping pliers, crimping pliers, crimping pliers for the crystal head, wire cutter, waterproof tape
Meter	Multimeter, network cable tester
Related devices	PC, screen, keyboard

> **Note**
>
> The installation tools are not included in the scope of delivery and should be purchased separately.
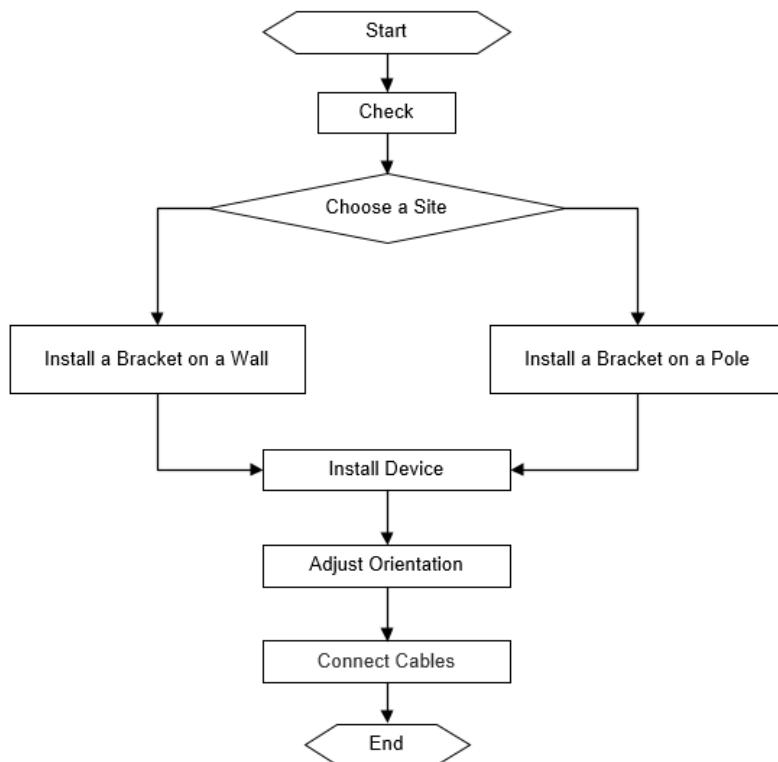
2.4 Checking before Installation

Please check your goods carefully against the Package Contents. If you have any questions or there are any errors, please contact your distributor.

3 Installing the Device

> ⚠️ **Caution**
>
> Before installing the device, make sure you have carefully read the requirements described in Chapter 2.

3.1 Installation Procedure

3.2 Preparing

Carefully plan and arrange the installation location, networking mode, power supply, and cabling before installation. Confirm the following requirements before installation:

- The installation position provides sufficient space for heat dissipation.

- The installation position meets the temperature and humidity requirements of the device.

- The power supply and required current are available in the installation position.

- The selected power supply modules meet the system power requirement.

- The network cables have been deployed in the installation position.

- The installation site meets all described requirements.

- The device meets the customers' requirements.

3.3 Precautions

The device can be mounted on a wall and a pole (diameter: 35 mm to 89 mm). If the diameter of the pole is out of the range, the hose clamp is customer-supplied. In this case, we strongly recommend you to use a hose clamp with thickness of 2.5mm at least. Otherwise, the device could fall down and cause injuries. When multiple bridges are installed at close range, in order to avoid interference between bridges, the horizontal distance between two bridges should be 2m and the vertical distance be 0.5m, or the horizontal angle of the two bridges should be greater than 120 degrees. The installation site can vary due to on-the-spot surveys conducted by technical personnel.

Please make full preparations as described in Chapter 2 and observe the following precautions before installing the device.

● Use the 24 V/0.6 A DC power adapter delivered with the device or an alternative power source with the same specifications to supply power to the device. Do not use power adapters with different specifications.
● The delivered DC power adapter and 1000M passive PoE combiner support power supply through a 100m Ethernet cable. Before using an Ethernet cable for power supply, make sure that the power switches of the power modules are off.
● Ensure the Ethernet cables and power cords are securely connected.
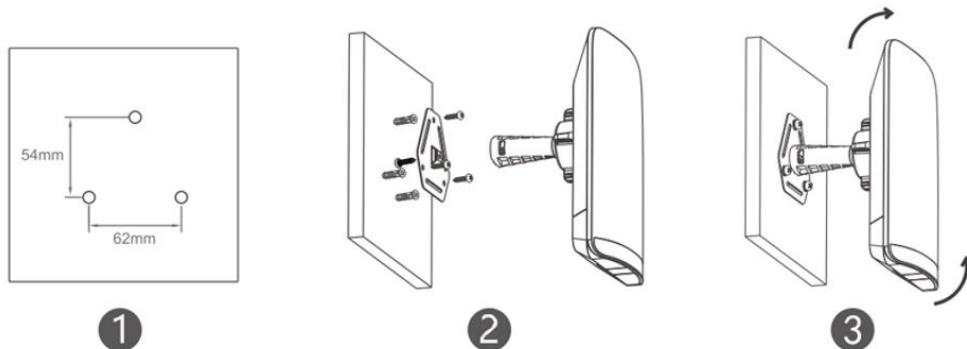
3.4 Mounting the Device

⚠ **Caution**
● It is recommended to install the device where you can get the optimal coverage.
● The image shown here is for indicative purpose only. The actual product may differ.

3.4.1 Wall Mounting

(1) Secure the mounting bracket on the wall.

(2) Install the device to the mounting bracket.

Figure 3-1 Wall Mounting

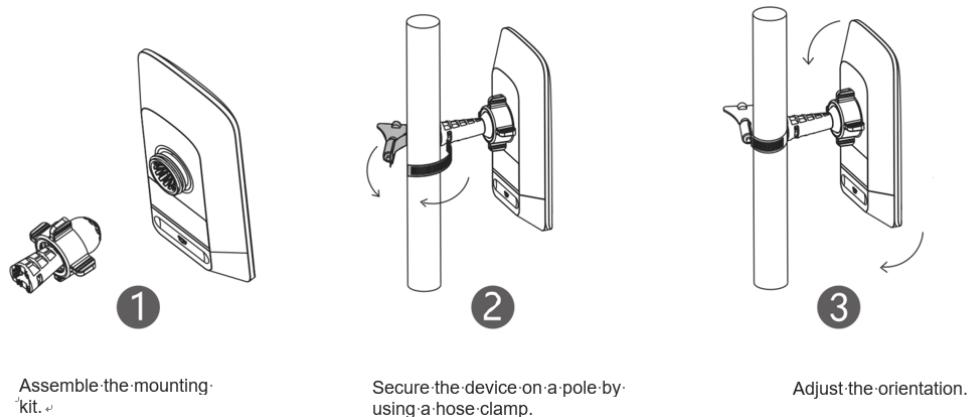
Insert·wall·anchors.

Assemble·the·mounting·kit.·

Adjust·the·orientation.

3.4.2 Pole Mounting

(1) Secure the mounting bracket to the pole by threading a clamp through the mounting bracket.

(2) Install the device to the mounting bracket.

Figure 3-2 Pole Mounting

Assemble·the·mounting·kit.

Secure·the·device·on·a·pole·by·using·a·hose·clamp.

Adjust·the·orientation.

3.5 Connecting Cables

(1) Select a cable (CAT5e or higher) according to the distance between the wireless bridge and the PoE adapter.

(2) Connect the PoE port of the 1000M 24V non-standard combiner to the LAN1/PoE port of the wireless bridge with an Ethernet cable. Connect the LAN port of the 1000M 24V non-standard combiner to the server or camera with another Ethernet cable. Connect the 24V/0.6A adapter to the 1000M 24V non-standard combiner to power the device. Alternatively, you can connect the 12V DC solar panel to the DC port of the wireless bridge for power supply, and then use another Ethernet cable to connect the LAN port of the wireless bridge to the server or camera.
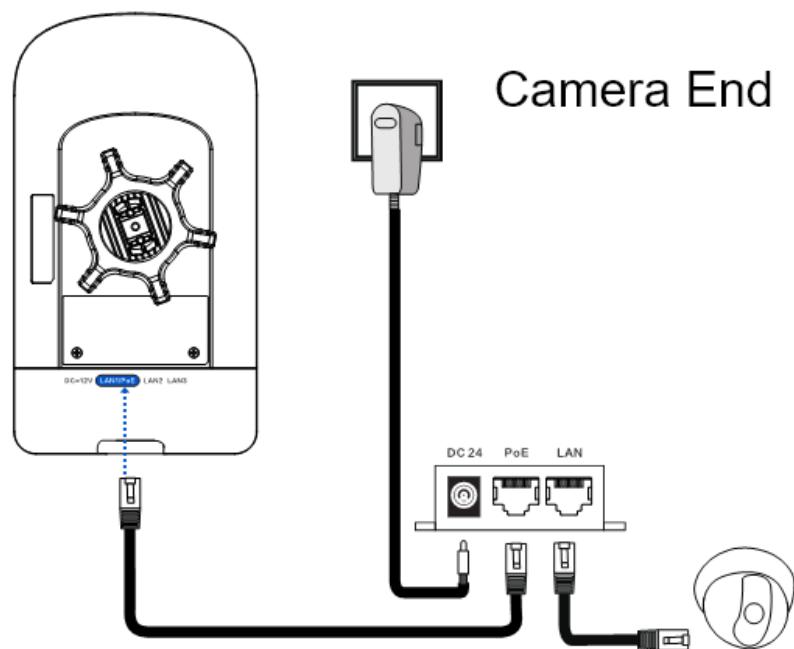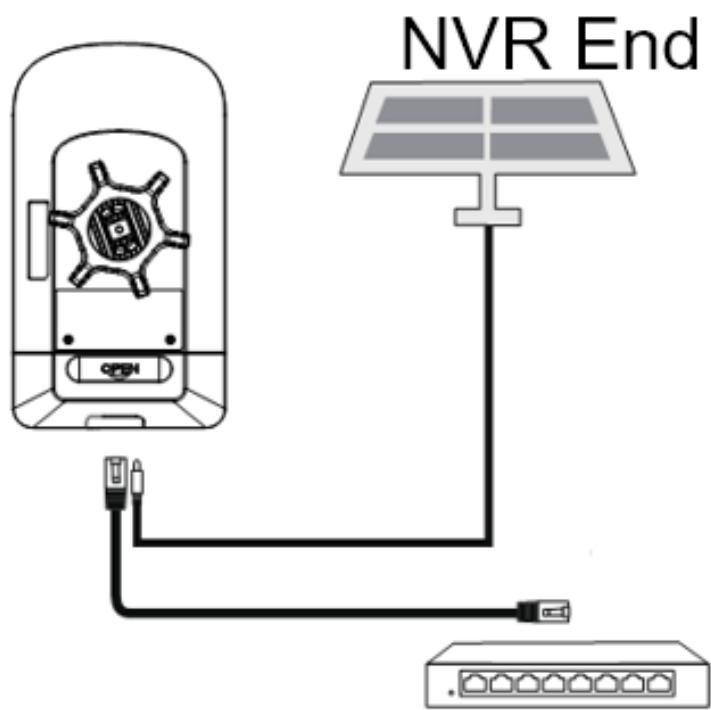
Figure 3-3 Connecting Cables
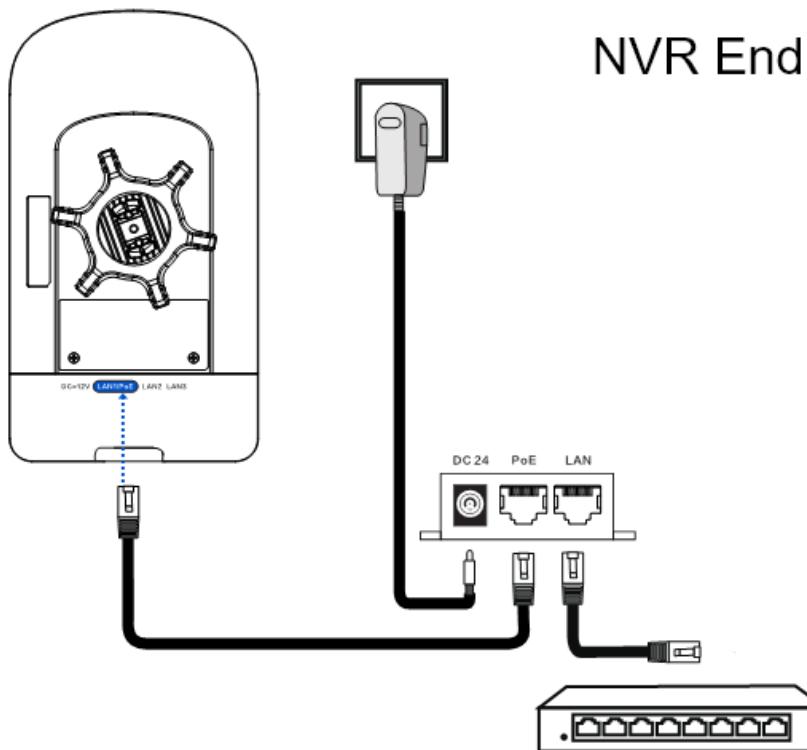
Figure 3 -4 Installing the Solar Panel
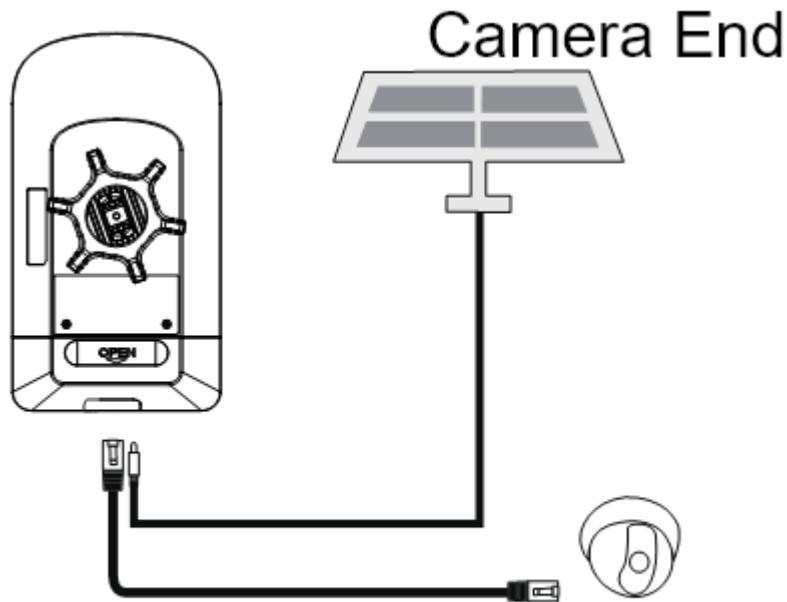
⚠️ **Warning**

- Remember to install the bottom cover for waterproof and dustproof purpose.
- Please do not use a switch or a PoE adapter of another model. Otherwise, the device may be damaged.

3.6 Verifying Installation

(1) Checking the Device

- Verify if the external power supply matches the specification.
- Verify that the device has been fastened and will not move or tilt.

(2) Checking the Power Supply

- Make sure all power cables are properly connected.
- Make sure the device is operational after power-on.

4 Debugging

4.1 Powering on the Equipment

(1) Checklist Before Power-on

○ The power cord is properly connected.

○ The input voltage meets the requirement of the bridge.

(2) Check (recommended): Whether the bridge LED is normal after power-on.

4.2 Login Configuration

● Method 1: Scan the QR code for configuration on the app

(1) Check whether the power supply is properly connected.

(2) Scan the QR code on this page or on the device to download the installation package. Ruijie Reyee APP and install it.

(3) log in to the device to perform configuration. APP

● Method 2: Login to the eWeb system. Web

(1) Connect the network port of the device to a PC using an Ethernet cable to manage the device (the default username is @Ruijie-bxxxx). SSID

(2) Accessing the Portal Server Through a Browser https://10.44.77.254.

(3) Enter the password and click Login to log in to the Eweb management system for configuration. <

5 Monitoring and Maintenance

5.1 Monitoring

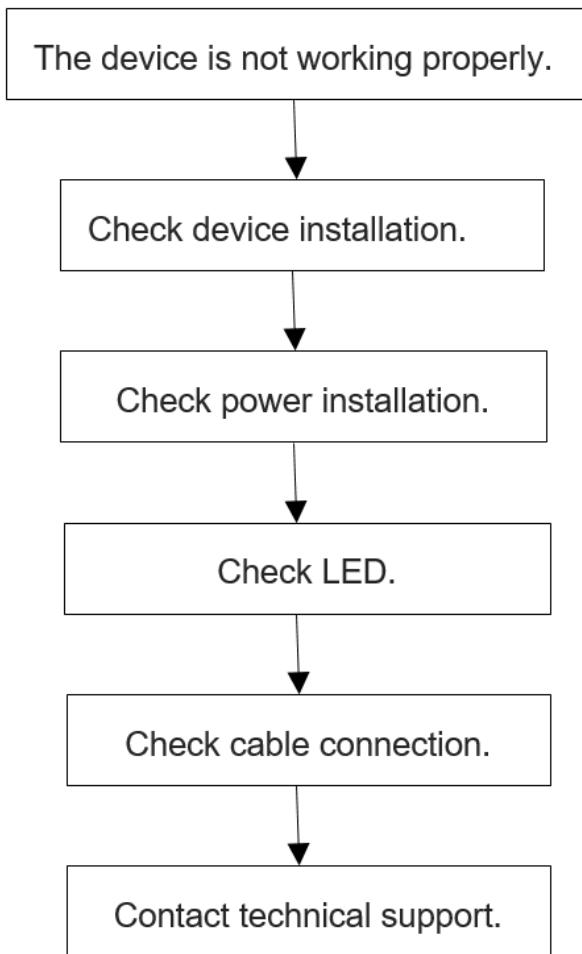When the RG-EST350G is running, you can monitor the device status by observing the indicator.

5.2 Maintenance

If a hardware error occurs, please contact Ruijie Reyee Technical support for help.

6 Troubleshooting

6.1 General Troubleshooting Procedure

The device is not working properly.

↓

Check device installation.

↓

Check power installation.

↓

Check LED.

↓

Check cable connection.

↓

Contact technical support.

7 Appendix A Connectors and Media Description

1000BASE-T/100BASE-TX/10BASE-T

The 1000BASE-T/100BASE-TX/10BASE-T is a 10/100/1000 Mbps auto-negotiation port that supports auto MDI/MDIX.

Compliant with IEEE 802.3ab, 1000BASE-T requires Category 5e 100-ohm UTP or STP (STP is recommended) with a maximum distance of 100 meters (328 feet).

1000BASE-T requires all four pairs of wires be connected for data transmission, as shown in Figure 7-1.

Figure 7-1   1000BASE-T Connection

Straight-Through		Crossover	
Switch	Switch	Switch	Switch
1 TP0+ ⟷ 1 TP0+		1 TP0+ ⟶ 1 TP0+	
2 TP0- ⟷ 2 TP0-		2 TP0- ⟶ 2 TP0-	
3 TP1+ ⟷ 3 TP1+		3 TP1+ ⟶ 3 TP1+	
6 TP1- ⟷ 6 TP1-		6 TP1- ⟶ 6 TP1-	
4 TP2+ ⟷ 4 TP2+		4 TP2+ ⟶ 4 TP2+	
5 TP2- ⟷ 5 TP2-		5 TP2- ⟶ 5 TP2-	
7 TP3+ ⟷ 7 TP3+		7 TP3+ ⟶ 7 TP3+	
8 TP3- ⟷ 8 TP3-		8 TP3- ⟶ 8 TP3-	

10BASE-T uses Category 3, 4, 5 100-ohm UTP/STP and 1000BASE-T uses Category 5 100-ohm UTP/STP for connections. Both support a maximum length of 100 meters. Figure 7-2 shows100BASE-TX/10BASE-T pin assignments.

Figure 7-2   100BASE-TX/10BASE-T Pin Assignments

Pin	Socket	Plug
1	Input Receive Data+	Output Transmit Data+
2	Input Receive Data-	Output Transmit Data-
3	Output Transmit Data+	Input Receive Data+
6	Output Transmit Data-	Input Receive Data-
4,5,7,8	Not used	Not used

Figure 7-3 shows wiring of straight-through and crossover cables for 100BASE-TX/10BASE-T.

Figure 7-3   100BASE-TX/10BASE-T Connection

Straight-Through		Crossover	
Switch	Adapter	Switch	Switch
1 IRD+ ⟷ 1 OTD+		1 IRD+ ⟶ 1 IRD+	
2 IRD- ⟷ 2 OTD-		2 IRD- ⟶ 2 IRD-	
3 OTD+ ⟷ 3 IRD+		3 OTD+ ⟶ 3 OTD+	
6 OTD- ⟷ 6 IRD-		6 OTD- ⟶ 6 OTD-	